Amendments to the Claims:

Claims 1-23 are pending in this application. Please amend claims 9, 11, 22 and 23 as follows:

1   1. (original) A manufacturing system comprising:

2   a plurality of industrial controllers, each industrial controller executing

3   logic establishing at least one queue having a queue length, each industrial controller

4   implementing a time clock, each industrial controller operative detect an event,

5   associate a preassigned event code with the event, read the time clock to obtain an

6   event time, and store as an event record the preassigned event code associated with

7   the event time in the queue;

8   a data communication network interconnecting the plurality of

9   industrial controllers;

10   a group computer connected to the data communication network, the

11   group computer operative to

12   (a)   synchronize the time clock in each of the plurality of industrial

13   controllers to the same time at a particular instant of time,

14   (b)   for each queue in each industrial controller, store a queue scan

15   rate value and the queue length,

16   (c)   for each queue in each industrial controller, retrieve at least

17   one of the event records held in that queue at a periodic interval based

18   on the scan rate value for that queue,

19   (d)   accumulate event records retrieved from the plurality of

20   industrial controllers, and

21   (e)   periodically forward the accumulated event records; and

22   a server in communication with the group computer, the server

23   operative to receive the forwarded accumulated event records and to store the

24   received event records for access by user interface programs.

1   2. (original) The system of claim 1 wherein the group computer

2   leaves each industrial controller in substantially the same state after retrieving event

3   records from any queue maintained by the industrial controller.

1   3. (original) The system of claim 2 wherein the group computer is

2   further operative to remove duplicate event records retrieved from each queue.

1   4. (original) The system of claim 2 wherein, for each queue, the

2   group computer compares a set of recently retrieved event records with a set of event

3   records retrieved from at least one preceding scan to determine if any duplicate event

4   records were retrieved.

1   5. (original) The system of claim 4 wherein the group computer

2   dynamically adjusts the queue scan rate value based on the comparison of the set of

3   recently retrieved event records and the set of event records retrieved from at least

4   one preceding scan.

1   6. (original) The system of claim 1 wherein the group computer

2   dynamically adjusts the queue length based on a comparison of a set of recently

3   retrieved event records and a set of event records retrieved from at least one

4   preceding scan.

1   7. (original) The system of claim 1 wherein each queue is emptied

2   by the operation of retrieving all event records held in that queue, each industrial

3   controller further operative to store a queue overflow event in the queue if the queue

4   overflows.

1   8. (original) The system of claim 1 wherein, for each queue, the

2   group computer is operative to dynamically adjust the queue scan rate value for that

3   queue if a queue overflow event is retrieved from that queue.
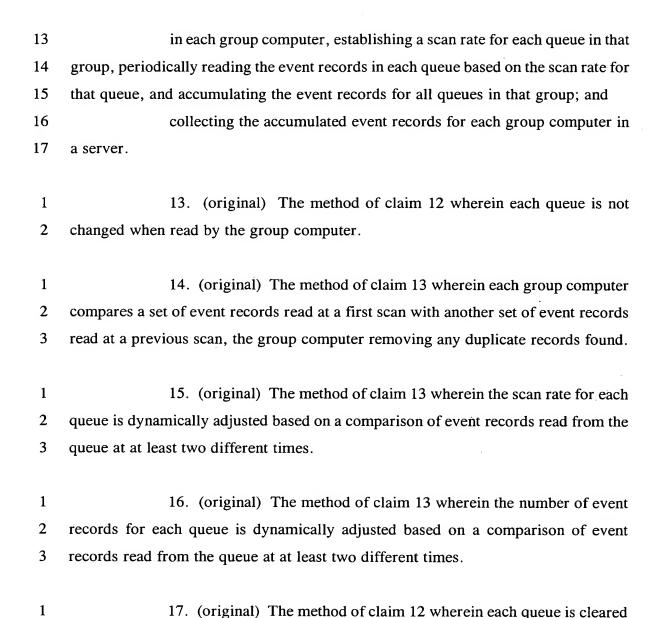
1   9. (currently amended) The system of claim 1 further comprising

2   additional groups of industrial controllers, each <u>additional</u> group of industrial

3   controllers interconnected by a data communication network to which is connected

4   a unique group computer, each <u>unique</u> group computer operative to periodically

5   forward accumulated event records to the server.

1   10. (original) The system of claim 1 wherein each industrial

2   controller is operative to store a recipe change and a time stamp for the recipe change

3   as an event record.

1   11. (currently amended) The system of claim 1 wherein the logic

2   establishing at least one queue is common to all industrial controllers of a similar type

3   ~~and wherein logic operative to detect an event is unique to each industrial controller~~

4   ~~application~~.

1   12. (original) A method of monitoring industrial equipment divided

2   into a plurality of groups, wherein at least one industrial controller is assigned to each

3   group, each industrial controller monitoring conditions of at least a portion of the

4   industrial equipment assigned to the group, the method comprising:

5   establishing a plurality of queues for each group, each queue operative

6   to hold a number of event records, each queue established by logic within one of the

7   industrial controllers;

8   in each industrial controller, establishing logic to detect a

9   predetermined event and store an indication of the detected event associated with a

10   time stamp as an event record in a queue associated with the predetermined event;

11   for each group, interconnecting a group computer with each of the at

12   least one industrial controller in that group through a data communication network;

13   in each group computer, establishing a scan rate for each queue in that

14 group, periodically reading the event records in each queue based on the scan rate for

15 that queue, and accumulating the event records for all queues in that group; and

16   collecting the accumulated event records for each group computer in

17 a server.

1   13. (original) The method of claim 12 wherein each queue is not

2 changed when read by the group computer.

1   14. (original) The method of claim 13 wherein each group computer

2 compares a set of event records read at a first scan with another set of event records

3 read at a previous scan, the group computer removing any duplicate records found.

1   15. (original) The method of claim 13 wherein the scan rate for each

2 queue is dynamically adjusted based on a comparison of event records read from the

3 queue at at least two different times.

1   16. (original) The method of claim 13 wherein the number of event

2 records for each queue is dynamically adjusted based on a comparison of event

3 records read from the queue at at least two different times.

1   17. (original) The method of claim 12 wherein each queue is cleared

2 when read by the group computer, the industrial controller further operative to store

3 a queue overflow event in the queue if the queue overflows.

1   18. (original) The method of claim 17 wherein the scan rate for each

2 queue is dynamically adjusted based on reading at least one queue overflow event.

1   19. (original) The method of claim 12 further comprising:

2   receiving an indication of a recipe change for at least a subset of the

3 industrial equipment; and

4   storing the indication of a recipe change as an event record.

1   20.   (original)   A method of monitoring industrial equipment

2 comprising:

3   detecting one of a predetermined set of events occurring in the

4 industrial equipment;

5   forming an event record by associating the detected event with a time

6 stamp;

7   pushing the event record onto a finite length queue initiated within an

8 industrial controller;

9   reading all event records held by the queue after an interval determined

10 as a scan rate;

11   discarding as a duplicate event record any event record matching a

12 previously read event record; and

13   dynamically determining the scan rate based on whether or not any

14 duplicate event records are discarded.

1   21.   (original)   A method of monitoring industrial equipment

2 comprising:

3   detecting one of a predetermined set of events occurring in the

4 industrial equipment;

5   forming an event record by associating the detected event with a time

6 stamp;

7   pushing the event record onto a finite length queue initiated within an

8 industrial controller;

9   pushing an overflow event record onto the queue if an overflow event

10 is detected;

11   reading and clearing all event records held by the queue after an

12   interval determined as a scan rate; and

13   dynamically determining the scan rate based on reading at least one

14   overflow event.

1   22.   (currently amended)   A method of monitoring industrial

2   equipment comprising:

3   establishing a plurality of queues, each queue established in an

4   industrial controller, each queue having a ~~its own~~ scan rate <u>for that queue</u>;

5   associating each of a plurality of events with an event label and one of

6   the plurality of queues;

7   detecting one of the plurality of events;

8   storing the event label associated with the detected event together with

9   a time stamp as an event record in the queue associated with the detected event;

10   reading each queue periodically at a rate determined by the scan rate

11   for that queue; and

12   accumulating the event records from the plurality of queues.

1   23. (currently amended) The method of claim 22 further comprising

2   automatically adjusting the scan rate of each queue based <u>on</u> the event records read

3   from that queue.